

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA
SOUTHERN DIVISION
No. 7:23-CV-897**

IN RE:)
) **UNITED STATES' MEMORANDUM IN**
CAMP LEJEUNE WATER LITIGATION) **OPPOSITION TO PLG'S MOTION FOR**
) **) AN ORDER EXCLUDING CERTAIN**
This Document Relates To:) **OPINIONS OF ALEXANDROS**
ALL CASES) **SPILIOTOPoulos, PH.D.**

INTRODUCTION

Dr. Alexandros Spiliotopoulos is a senior hydrogeologist and water modeling expert at S.S. Papadopoulos & Associates, a well-known environmental consulting firm that has played an instrumental role in developing techniques for using computer models to evaluate groundwater contamination. The United States retained Dr. Spiliotopoulos to evaluate water models that were developed by the Agency for Toxic Substances and Disease Registry (“ATSDR”) to support its epidemiological studies related to Marine Corps Base Camp Lejeune (“Camp Lejeune”). These models purportedly estimated mean monthly concentrations of contaminants in three water distribution systems at Camp Lejeune. As part of this effort, ATSDR simulated decades of historical groundwater qualities from the 1950s to 1980s based on a small number of samples taken after 1982. Based on his evaluation, Dr. Spiliotopoulos opines that ATSDR lacked sufficient data to reconstruct estimated monthly concentration levels at the level of detail presented in its analysis, and that ATSDR’s water models are uncertain and biased-high.

Plaintiffs’ Leadership Group (“PLG”) asks this Court to exclude eight broad categories of opinions held by Dr. Spiliotopoulos in the Water Contamination Phase of this litigation. *See generally* Pls.’ Mot., [D.E. 376](#). PLG’s arguments in support of excluding Dr. Spiliotopoulos’s opinions are illogical and misleading. Further, PLG argues that Dr. Spiliotopoulos’s opinions are

unreliable, but PLG misapplies the standards that courts have used to determine admissibility under Federal Rule of Evidence 702. Therefore, PLG's Motion must be denied.

NATURE OF THE CASE

Plaintiffs have filed actions for personal injury and wrongful death related to exposure to contaminated water pursuant to the Camp Lejeune Justice Act of 2022, Pub. L. No. 117–168, § 804, 136 Stat. 1759, 1802–04 (2022).

STATEMENT OF FACTS

Dr. Spiliopoulos is a Doctor of Civil and Environmental Engineering, with over twenty years of relevant experience in groundwater modeling and evaluating the fate and transport of contaminants in the environment. *See* Spiliopoulos Rep., [D.E. 377-3](#) at 10, 134–39. He has worked with various public and private sector clients to perform groundwater modeling and evaluate the fate and transport of contaminants, including at National Priorities List sites like the Hanford, Washington nuclear plant. *Id.* Dr. Spiliopoulos is published and has presented at multiple conferences across the country. *Id.* Through their experts, PLG has advocated for the wholesale adoption of ATSDR's water modeling to determine the absolute concentrations of contaminants that individuals at Camp Lejeune were exposed to between 1953 and 1987.¹ In response to PLG's expert reports, Dr. Spiliopoulos independently evaluated and offered opinions regarding the water modeling efforts carried out by ATSDR. *See generally id.*

Dr. Spiliopoulos opines, *inter alia*, that (1) ATSDR lacked sufficient data to reconstruct historical concentrations of contaminants at the level of detail presented in its analyses; (2)

¹ The United States has filed a Motion in Limine to Exclude Plaintiffs' Phase I Expert Testimony in Support of Using ATSDR's Water Models to Determine Exposure Levels for Individual Plaintiffs. [D.E. 367](#). In that motion, the United States argues that ATSDR's models were not intended to determine exposure levels for individuals. Accordingly, the models are not reliable under Rule 702 for determining individuals' exposure levels in this litigation. *See generally id.*

ATSDR's groundwater models were constructed using model inputs that were both incorrect and unrepresentative of the real-world conditions at Camp Lejeune; and (3) ATSDR's groundwater models produced biased-high estimates of monthly contaminant concentrations. *See id.* at 3–4. Dr. Spiliotopoulos's opinions are consistent with contemporary reviewers of ATSDR's water models, including those from the Department of the Navy ("Navy") and the National Research Council ("NRC").

PLG asks this Court for an Order to exclude eight broad categories of opinions from Dr. Spiliotopoulos:

- (1) opinions on ATSDR's intent and purpose with respect to conducting its water modeling;
- (2) opinions from a section of his report titled "Timeline and Scientific Discourse on ATSDR's Camp Lejeune Water Modeling";
- (3) opinions on how ATSDR's modeling results can or should be used by epidemiologists, doctors, or public health professionals;
- (4) opinions that ATSDR's modeling approaches were "cutting-edge" or still in the research stages;
- (5) opinions regarding ATSDR's uncertainty and sensitivity analyses;
- (6) opinions regarding the loss of contaminants from drinking water during the water treatment process;
- (7) opinions on the timing of the release of perchloroethylene ("PCE") into the environment at Tarawa Terrace; and
- (8) opinions on water quality data collected from water supply well HP-634.

Pls.' Mem., D.E. 377, at 1–2.

LEGAL STANDARD

Fed. R. Evid. 702 seeks to ensure that expert witness testimony evidence is reliable and relevant. *Daubert v. Merrell Dow Pharmas., Inc.*, 509 U.S. 579, 589 (1993) [hereinafter *Daubert*]. The focus of the inquiry under Fed. R. Evid. 702 “must be solely on principles and methodology, not on the conclusions that they generate.” *In re Lipitor (Atorvastatin Calcium) Mktg., Sales Pracs. & Prods. Liab. Litig. (No II) MDL 2502*, 892 F.3d 624, 631 (4th Cir. 2018) (quoting *Daubert*, 509 U.S. at 595). Moreover, “the court should not resolve contested factual issues at the admissibility stage.” *Mountain Valley Pipeline, LLC v. 0.32 Acres of Land*, 127 F.4th 427, 435 (4th Cir. 2025).

ARGUMENT

PLG argues that Dr. Spiliopoulos’s opinions are not supported by sufficient facts or data, that he failed to apply a reliable methodology in rendering his opinions, and that his “opinions critiquing ATSDR’s methodology fail all of the *Daubert* factors.” Pls.’ Mem., D.E. 377, at 8 (citing *Daubert v. Merrell Dow Pharmas., Inc.*, 43 F.3d 1311, 1318–19 (9th Cir. 1995) [hereinafter *Daubert II*]). However, beyond these conclusory statements, PLG fails to demonstrate how any of Dr. Spiliopoulos’s opinions are unreliable under Fed. R. Evid. 702 and *Daubert*. PLG also repeatedly misstates the record and identifies several areas of factual dispute between the Parties’ Water Contamination Phase experts. PLG’s argument merely reveals their disagreement with Dr. Spiliopoulos’s opinions that should be subject to traditional means of challenging expert opinions, including “[v]igorous cross-examination,” and “presentation of contrary evidence.” *Daubert*, 509 U.S. at 596. PLG has not made an appropriate admissibility challenge to Dr. Spiliopoulos’s opinions under the standards of Fed. R. Evid. 702. Therefore, PLG’s Motion must be denied.

I. **Dr. Spiliotopoulos Properly Considered the Contemporaneous Statements of ATSDR, its Employees, and Independent Evaluators When Offering Opinions on the Qualities of ATSDR’s Modeling Work.**

A. **Dr. Spiliotopoulos Considered ATSDR’s Contemporaneous Statements about the Intent and Purpose of Developing the Water Models in Forming His Opinions.**

After Camp Lejeune was placed on the National Priorities List by the Environmental Protection Agency (“EPA”), ATSDR began conducting epidemiologic health studies on the effects of exposure to contaminated drinking water at Camp Lejeune. These studies sought to investigate the potential impacts of exposure to contaminated drinking water. However, as ATSDR stated in one of its water modeling reports, “[b]ecause limited measurements of contaminant and exposure data [were] available to support the epidemiological study, ATSDR [used] modeling techniques to reconstruct historical conditions of groundwater flow, contaminant fate and transport, and the distribution of drinking water contaminated with [volatile organic compounds] delivered to family housing areas.” ATSDR, Chapter A: Summary of Findings, [D.E. 370-3](#), at A1.

Dr. Spiliotopoulos considered this, and similar statements made contemporaneously by ATSDR regarding the purpose of the models, in forming and offering his opinions. Spiliotopoulos Rep., [D.E. 377-3](#), at 23 (quoting ATSDR’s stated purpose of the Hadnot Point water modeling effort). Considering the intent and purpose of a model is necessary as part of employing a reliable methodology. PLG’s water modeling experts agree that when evaluating a model, it is important to consider the model’s purpose. *See* Davis Dep. Tr., [D.E. 357-3](#), at 69:11–70:3, 211:1–6; Konikow Dep. Tr., [D.E. 357-9](#), at 129:1–130:19; *see also Exhibit 1*, Mustafa Aral, *Environmental Modeling and Health Risk Analysis (Acts/Risk)* 40 (2010) [hereinafter “Aral Book Excerpts”] (“All models are developed to answer a specific question about the system

outcome. The use of models in a specific application cannot and should not go beyond the question posed during the model development stage.”).

According to Dr. Spiliotopoulos, evaluating model calibration (or “history matching”) is “important for evaluating a model’s fit for purpose.” Spiliotopoulos Rep., [D.E. 377-3](#), at 10; *see also* Spiliotopoulos Dep. Tr., [D.E. 377-2](#), at 153:12–25 (testifying that he included a statement about the water modeling being done for epidemiologic studies because it “support[s his] work in looking at whether the modeling work that was done provided good results to rely on and support such evaluations”). Contrary to PLG’s contention, Dr. Spiliotopoulos is not offering any opinion inferring the intent or purpose of ATSDR’s studies—rather, he is properly considering ATSDR’s own statements of its intent and purpose in support of his opinions.² PLG’s Motion seeking to exclude Dr. Spiliotopoulos’s discussion of ATSDR’s intent and purpose in creating the water models should therefore be denied.

B. Dr. Spiliotopoulos Considered and Relyed on the Documents Summarized in Section 3.3 of his Report in Forming his Opinions.

In Section 3.3 of Dr. Spiliotopoulos’s report, he lays out a timeline of events and scientific discourse that he considered in rendering his opinions on the reliability of ATSDR’s water models. For example, Dr. Spiliotopoulos notes in the timeline that EPA placed Camp Lejeune on the National Priorities List, triggering a public health assessment by ATSDR, which ultimately led to the decision to create water models. Spiliotopoulos Rep., [D.E. 377-3](#), at 16–17. He noted the occurrence of expert panels and other external reviews of the modeling by the

² In a footnote, PLG asserts that Dr. Spiliotopoulos’s citation to bench books on hydrologic modeling and deposition testimony “raises questions as to who wrote certain portions of [his] report.” Pls.’ Mem., [D.E. 377](#), at 11. In response to PLG’s subpoena, the United States has produced almost two hundred fifty pages of detailed billing records for the period 2022 onward, which show Dr. Spiliotopoulos invoiced at least 180 hours for work on his report in that timeframe (and not including the hours of staff or assistants working under Dr. Spiliotopoulos). Moreover, when asked at deposition whether he wrote his report, Dr. Spiliotopoulos replied, “Yes, I did.” Spiliotopoulos Dep. Tr., [D.E. 377-2](#), at 100:14–15.

Government Accountability Office, the Navy, and the NRC. *Id.* at 17–22. Dr. Spiliotopoulos returns to these assessments throughout the body of his report to inform and support his opinions. *See, e.g., id.* at 31–32, 36, 46, 68, 70, 78. Next, Dr. Spiliotopoulos notes the passing of a bill to provide medical benefits to those impacted by water contamination at Camp Lejeune, a policy decision informed by ATSDR’s modeling efforts. *Id.* at 22. In support of his opinions, Dr. Spiliotopoulos also cited to the ATSDR’s epidemiology studies which included analyses derived from ATSDR’s water modeling. *Id.* at 23–24.

PLG argues that Section 3.3 of Dr. Spiliotopoulos’s report, titled “Timeline and Scientific Discourse on ATSDR’s Camp Lejeune Water Modeling” must be excluded because it constitutes a “summary of events, narration of select documents, and opinions on the intent, motive, or state-of-mind of third parties and are not proper topics of expert testimony.” Pls.’ Mem., [D.E. 377](#), at 10. In support of this argument, PLG cites two cases: *City of Huntington v. AmerisourceBergen Drug Corp.*, No. CV 3:17-01362, 2021 WL 1436672 (S.D.W. Va. Apr. 15, 2021), and *In re Davol, Inc./C.R. Bard, Inc., Polypropylene Hernia Mesh Products Liability Litigation*, 546 F. Supp. 3d 666 (S.D. Ohio 2021). Both are inapposite.

In *City of Huntington*, the District Court for the Southern District of West Virginia excluded the testimony of a former Drug Enforcement Agency (“DEA”) agent who offered an overview of the laws that governed the case and how DEA enforces those laws. 2021 WL 1436672, at *1–3. The court in *City of Huntington* held that the former DEA agent’s testimony constituted an impermissible narrative because it was not necessary to support his opinions. *Id.* The court found that the former DEA agent’s narrative was “the end in itself” because it was not provided in support of any separate opinions. *Id.* at *3. Similarly, in *In re Davol*, the District Court for the Southern District of Ohio excluded a portion of the testimony of a materials science

expert that summarized corporate documents because the expert did not rely on those documents in forming his opinions. 546 F. Supp. 3d at 670–80.

These cases are distinguishable. Dr. Spiliotopoulos relied on the timeline in Section 3.3 of his report in forming and supporting his opinions. This section outlines the history and purpose of the ATSDR’s model, and even PLG’s experts agree that knowing the purpose of a model is essential for any modeling effort. *See, e.g.*, Konikow Dep. Tr., [D.E. 357-9](#), at 129:15–23, 213:14–18; Davis Dep. Tr., [D.E. 357-3](#), at 69:11–21, 211:1–6; *see also* Ex. 1, Aral Book Excerpts, at 40. Dr. Spiliotopoulos’s assessment of the purpose of the model is informed by the context of its creation and the scientific discourse surrounding the model’s development. Spiliotopoulos Dep. Tr., [D.E. 377-2](#), at 97:25–98:7 (testifying that whether a model is properly calibrated “depends on the intended purpose of the model, and it also depends on what data are available to perform that calculation, and, therefore, how confident you are in the calibrated model that you have”). Unlike the experts in *City of Huntington* and *In re Davol*, Dr. Spiliotopoulos substantively relied on the documents summarized in Section 3.3 of his report in forming his opinions. PLG’ Motion seeking to exclude this Section should therefore be denied.

C. Dr. Spiliotopoulos Has Not Disclaimed the Opinion That Certain of ATSDR’s Modeling Approaches Were Cutting-Edge, but Rather Considered the Conclusions of the NRC in Forming His Opinions.

PLG next contends that Dr. Spiliotopoulos should be precluded from offering opinions regarding ATSDR’s modeling approaches that “allegedly were ‘cutting-edge’ and/or still in the research stages” because he “disclaimed” them. Pls.’ Mem., [D.E. 377](#), at 12. In support of this contention, PLG cites the following portion of the deposition transcript:

Q: No. You say that, “Some of the modeling approaches used by ATSDR were cutting edge, meaning that they used computer codes and modeling techniques that are still in the research stage.” Which computer codes and modeling techniques are you referring to there?

A. First of all, that’s a quote; right.

Q. Sure. In your opinion, which computer codes and modeling techniques of ATSDR were still in the research stage that they used for their modeling of Tarawa Terrace?

MR. ANWAR: Object to form.

THE WITNESS: I believe that's something for the NRC to articulate.

BY MS. BAUGHMAN: Can you identify any today?

A. That's not part of the opinions that I provide. So I don't have an opinion on that.

Spiliopoulos Dep. Tr., [D.E. 377-2](#), at 147:14–148:6.

Page 21 of Dr. Spiliopoulos's report contains a quote from a study published by the NRC, which discusses the “cutting-edge” modeling approaches used by ATSDR in their Camp Lejeune modeling efforts. Spiliopoulos Rep., [D.E. 377-3](#), at 21. The NRC stated:

Some of the modeling approaches used by ATSDR were “cutting-edge,” meaning that they used computer codes and modeling techniques that are still in the research stage and have yet to be validated. Furthermore, the absence of measurement data for the first 30 years of the contamination period means the predictions, even if based on validated codes and models, cannot be evaluated for accuracy. The actual concentrations may have been higher or lower than the predictions, but that cannot be assessed.

National Research Council, *Contaminated Water Supplies at Camp Lejeune: Assessing Potential Health Effects* 4 (2009), [D.E. 372-3](#). Moreover, PLG's own expert and the project manager for ATSDR's water modeling efforts, Morris Maslia, acknowledged that ATSDR's use of water models was “a novel application.” June 30, 2010 Maslia Dep. Tr., [D.E. 370-6](#), at 45:15–17.

While Dr. Spiliopoulos is not offering an independent opinion about cutting-edge techniques, he considered the NRC's evaluation and Mr. Maslia's testimony in forming his own opinions and evaluation. For example, Dr. Spiliopoulos noted that “ATSDR used the Linear Control Model (LCM), an alternative methodology for reconstructing the historical concentrations of the [volatile organic compound] degradation by-products.” Spiliopoulos Rep., [D.E. 377-3](#), at 82. PLG's expert, Dr. Aral, agrees. See Aral Rep., [D.E. 359-2](#), at 15–20 (stating that the LCM was implemented by the use of TechControl, a sub-model developed by Dr. Aral's research laboratory for the Camp Lejeune modeling effort). Dr. Spiliopoulos continued, “[a]pplication of [the

LCM] methodology relied on the same limited set of observed data, available after 1985. As illustrated in Figure 33, the historical reconstruction prior to 1985 cannot be verified, due to lack of observed data for the period.” Spiliotopoulos Rep., [D.E. 377-3](#), at 82.

Even though Dr. Spiliotopoulos never disputed the novelty of ATSDR’s water model, but instead merely deferred to the NRC in that regard, any allegedly inconsistent testimony is not a basis for exclusion under Fed. R. Evid. 702. *See Sanchez v. Bos. Sci. Corp.*, No. 2:12-CV-05762, 2014 WL 4851989, at *21 (S.D.W. Va. Sept. 29, 2014) (finding that the existence of inconsistent opinions goes to the weight, and not admissibility, of an expert’s testimony).

D. Without Offering Any Specific Opinions on the Appropriate Use of Models by Epidemiologists or Health Professionals, Dr. Spiliotopoulos Rightly Acknowledges that the Inaccuracy and Uncertainty of ATSDR’s Water Models Could Impact Decisions about Health Effects.

PLG next asserts that Dr. Spiliotopoulos “has no experience or expertise that qualifies him to offer an opinion as to whether or how a health professional can or should use ATSDR’s modeling results to assess individual exposures to contaminants or to conduct an epidemiological study.” Pls.’ Mem., [D.E. 377](#), at 12. However, Dr. Spiliotopoulos has not offered any such opinions. PLG contends these opinions are expressed on page 25 of Dr. Spiliotopoulos’s report. Pls.’ Mem., [D.E. 377](#), at 2. Rather than expressing any opinion on how a health professional can use ATSDR’s modeling results, however, Dr. Spiliotopoulos merely quoted ATSDR’s reports regarding their intended purpose. *See* Spiliotopoulos Rep., [D.E. 377-3](#), at 25.

Dr. Spiliotopoulos does not opine whether or how a health professional should use ATSDR’s modeling results. Instead, he opines that the accuracy of the contaminant concentrations these models simulated are highly uncertain and likely to be biased-high. Spiliotopoulos Rep., [D.E. 377-3](#), at 33–55, 87–89. The accuracy of the contamination levels simulated by the model is unquestionably relevant to the purpose of determining exposure levels

in individuals, and to the purpose of determining health effects associated with exposure—which is how PLG has proposed using ATSDR’s water models. Dr. Spiliotopoulos recognized:

[W]hen models are used for hindcasting or forecasting conditions that are directly translated to substantially more important decisions, such as health impacts, the implications of model uncertainty have to be viewed more critically. Camp Lejeune is a suitable case in point. ATSDR reconstructed historical conditions at Camp Lejeune to calculate how much contamination (i.e., dose) people at Camp Lejeune were exposed to, by implementing “*a unique application of-- of going backward in time,*” and “*reconstructing backwards in time for 30, 35 years at a monthly interval,*” using “[n]ovel application” of significant complexity.

Spiliotopoulos Rep., [D.E. 377-3](#), at 28 (emphasis in original) (citations omitted). While Dr. Spiliotopoulos does not opine on the appropriate use of water models by health professionals, he does acknowledge that, from an engineering perspective, the accuracy of these models is insufficient to meet the stated purpose of determining how much contamination was historically present in drinking water. *Id.* This opinion is wholly within Dr. Spiliotopoulos’s realm of expertise and PLG has not offered an appropriate basis under Rule 702 to exclude it.

II. Dr. Spiliotopoulos’s Opinions about the Tarawa Terrace Model Sensitivity Analysis and Hadnot Point-Holcomb Boulevard Uncertainty Analysis Are Supported by Peer-Reviewed Literature and Based on the Same Standards That He Would Use in His Non-Litigation Practice.

PLG argues that the broad category of Dr. Spiliotopoulos’s opinions related to ATSDR’s sensitivity and uncertainty analyses must be excluded. Pls.’ Mem., [D.E. 377](#), at 2, 4–10.

Sensitivity and uncertainty analyses are steps in the groundwater modeling workflow. In the words of PLG’s expert, Dr. Konikow, “there’s always uncertainty and certainly errors in every model, and what you try to do in standard practice is assess how serious those errors might be, how they might affect the results.” Konikow Dep. Tr., [D.E. 357-9](#), at 228:18–229:11; *see also* Ex. 1, Aral Book Excerpts, at 17 (“Because models are not a precise and complete depiction of the real system, they need to be presented and analyzed in a computational environmental which should include an analysis of uncertainty.”). Groundwater modelers perform “sensitivity tests

and uncertainty analysis to help assess what confidence [one] should have in the model because we recognize that the model is not the reality.” Konikow Dep. Tr., [D.E. 357-9](#), at 228:18–229:11. Dr. Spiliopoulos opined, *inter alia*, that ATSDR’s uncertainty and sensitivity analyses for Tarawa Terrace and Hadnot Point-Holcomb Boulevard were not supported by sufficient data, were incomplete, and did not account for site-specific conditions. See Spiliopoulos Rep., [D.E. 377-3](#), at 2–4. PLG’s arguments against the admissibility of these opinions fail.

A. Dr. Spiliopoulos Considered and Relied on Peer-Reviewed Literature and Other Reputable Authorities in Forming His Opinions.

PLG repeatedly misrepresents that Dr. Spiliopoulos failed to cite to published literature to support his opinions. Pls.’ Mem., [D.E. 377](#), at 5–9. Even a cursory reading of Dr. Spiliopoulos’s report reveals that he repeatedly cites to published scientific literature in support of his opinions, and his report includes a reference list identifying published literature that he considered in forming his opinions. On the topic of uncertainty analysis, Dr. Spiliopoulos cited numerous studies and books published by his peers in groundwater modeling. For example, Dr. Spiliopoulos identified the “general rule for the calibrated model output (prediction)” from John Doherty, *Calibration and Uncertainty Analysis for Complex Environmental Models* 52 (2015), and explained that ATSDR’s models failed to obey that rule:

Recall the discussion in Section 3.1.5 about the general rule for the calibrated model output (prediction): “[i]deally, the value of that prediction should lie somewhere near the centre of the uncertainty band of the prediction. In this way, the potential for predictive error is minimized.”²⁹⁴ Inspection of Figure 36 indicates that the calibrated model fails to conform with this rule at two critical times: (a) in the early 1950s, when the model estimates the arrival of TCE at the pumping wells and, thus, the influent to the WTP, and (b) after 1972, when pumping well HP-651 was put in service.

. . . .

²⁹⁴ Doherty (2015), p. 52

Spiliotopoulos Rep., [D.E. 377-3](#), at 92 (emphasis in original); *see also id.* at 48 (referring to an earlier citation of Doherty (2015) in support of the proposition that ATSDR’s uncertainty analysis demonstrates that the calibrated model is biased-high). Mr. R. Jeffrey Davis, an expert for the Plaintiffs, testified that the Doherty text cited here by Dr. Spiliotopoulos is reliable. Davis Dep. Tr., [D.E. 357-3](#), at 306:25–307:8. Dr. Spiliotopoulos modified model inputs and re-ran portions of ATSDR’s models to test for compliance with this rule based on the use of site-specific, rather than generic, data. Spiliotopoulos Rep., [D.E. 377-3](#), at 48–54, 81–82.

In his introductory discussion of aspects of groundwater model development, which includes model calibration, sensitivity analysis, and uncertainty analysis, Dr. Spiliotopoulos also cites to, *inter alia*, Anderson et al. (2015), Zheng & Bennet (2002), Reilly and Harbaugh (2004), and Harter et al. (2018). Spiliotopoulos Rep., [D.E. 377-3](#), at 8–11.

In Section 4 of his report, Dr. Spiliotopoulos further cites to published literature sources. By way of example, Dr. Spiliotopoulos cited a 2002 study by Meyer and Orr (2002) in support of the proposition that uncertainty ranges can be skewed upward when site-specific data are ignored in favor of generic datasets. *Id.* at 28. Similarly, Dr. Spiliotopoulos quotes peer reviewed studies from Sepulveda et al. (2015) and Clement (2011) to support his opinion that ATSDR’s Tarawa Terrace model did not consider the “observed system behavior,” meaning measured or observed data taken from the Tarawa Terrace water supply wells and water treatment plant. *Id.* at 45–46.

When questioned at deposition, Dr. Spiliotopoulos confirmed the numerous sources he relied on in forming his opinions:

Q. Can you cite any discussion in the literature, textbooks, standards that supports your criticism of how ATSDR did its uncertainty analysis for Tarawa Terrace?

MR. ANWAR: Object to form.

THE WITNESS: I have cited references with respect to how the uncertainty analysis is supposed to be conducted, but it includes various aspects of it. I’m not sure you want me to --

BY MS. BAUGHMAN: I want to know about this range issue. . . .

Spiliopoulos Dep. Tr., [D.E. 377-2](#), at 305:19–306:5. When the attorney for PLG pressed Dr. Spiliopoulos on the justification for his opinions, he elaborated:

Q: Are you relying on your professional judgment?

A: And I'm referencing literature sources where a discussion is made about how the --

Q: Show me where the literature in your -- specifically where you're criticizing the uncertainty analysis in your report, what's the literature source for that?

A: I'm sorry. Which part of the criticism that I provided?

Q: Where you're criticizing uncertainty analysis, what's your literature source for that?

A: I believe -- let me just go and check. One aspect is, for example, the value of that predictions should --

Q: What -- I'm sorry?

A: Page 92.

Q: Tell me what I want is the citation to a textbook or a standard in your field or a published document. Is that what you're telling me [you] cited to?

A: Yes, [footnote] 294, yes.

Q: What page?

A: 92.

Q: So Doherty --

A: That's one that I can --

Q: Is this about the uncertainty analysis?

A: Yes.

Q: The page 52. Anything else?

A: And [footnote] 35, that's section 3[.]1[.]5.

Q: What page?

A: Page 8.

Q: What source are you relying on here?

A: Hill and Tiedeman talking about precision accuracy of the model outputs when we're looking at uncertainty analysis.

Q: What about the sections of your report where you discuss your criticisms of the uncertainty analysis, did you cite any literature or textbook there in support of your analysis or your opinions?

A: I'm not sure I had to.

Q: Did you? Yes or no.

A: I don't think I did specific for some --

Q: Let's move on because I don't have much time left.

Spiliopoulos Dep. Tr., [D.E. 377-2](#), at 313:5–314:25.

In short, PLG's conclusory allegation that Dr. Spiliopoulos "cite[d] no peer reviewed literature or other authorities in support of his critiques of ATSDR's methodology" is

contradicted by both Dr. Spiliopoulos's report and the testimony PLG elicited from him at deposition. Pls.' Mem., [D.E. 377](#), at 5.

Even if Dr. Spiliopoulos had cited no published literature in support of his opinions—which is not the case—his opinions would still be admissible under *Daubert*. This Court has held that, in the absence of “specific industry standard[s],” experts are permitted to “base their opinions on a comparison with their experience.” *Bouygues Telecom, S.A. v. Tekelec*, No. 4:05-CV-78-FL, 2007 WL 9718141, at *9 (E.D.N.C. Feb. 12, 2007); *see also McCullock v. H.B. Fuller Co.*, 61 F.3d 1038, 1044 (2d Cir. 1995) (“Disputes as to . . . lack of textual authority for [an] opinion, go to the weight, not the admissibility, of [the] testimony.”). Indeed, PLG’s own experts agree with Dr. Spiliopoulos that contaminant fate and transport modeling require the subjective judgment of the modeler. *See, e.g.*, Konikow Dep. Tr., [D.E. 357-9](#), at 289:6–17 (agreeing that calibration targets are subjective and that assessing whether a model is calibrated is “partly subjective.”); Davis Dep. Tr., [D.E. 357-3](#), at 132:7–25 (testifying that the amount of data needed to accurately perform water modeling is “completely subjective.”); Konikow Groundwater Modeling Chapter, [D.E. 370-2](#), at 14 (“However, even with regression modeling, the hydrologic experience and judgment of the modeler continues to be a major factor in calibrating a model both accurately and efficiently.”).

Contrary to PLG’s unsupported assertions, Dr. Spiliopoulos identified peer reviewed literature and other reputable authorities that support his critiques of ATSDR’s methodology in his report and in his deposition testimony. Moreover, PLG’s own experts agree that water modeling requires some subjective analysis on the part of the modeler, for which textual authority does not exist. *See* Davis Dep. Tr., [D.E. 357-3](#), at 132:10–25 (testifying that “there’s not a definition written” for how much data is needed to accurately perform modeling); *see also*

ATSDR Response to DON Letter, [D.E. 357-7](#), at 10 (“Note, however, that published or accepted groundwater-flow or contaminant fate and transport model calibration standards are currently not established.”) (emphasis in original). Finally, lack of textual authority in support of expert opinions is more properly raised on cross-examination, not under a motion to exclude pursuant to Fed. R. Evid. 702. *McCulloch*, 61 F.3d at 1044. Accordingly, to the extent PLG’s Motion is based on arguments related to Dr. Spiliopoulos’s cited authorities, it should be denied.

B. Dr. Spiliopoulos’s Opinions About the Adequacy of the ATSDR’s Uncertainty Analysis of the Tarawa Terrace and Hadnot Point Models are Entirely Consistent with Each Other, as Demonstrated by His Report and Deposition Testimony.

PLG next claims that Dr. Spiliopoulos’s opinions are contradictory. *See* Pls.’ Mem., [D.E. 377](#), at 5, 6–7. In support of this claim, PLG argues that Dr. Spiliopoulos contradicts himself by alternatively “endorsing” and critiquing ATSDR’s selection of parameter ranges for its model calibration. Pls.’ Mem., [D.E. 377](#), at 6 (quoting Spiliopoulos Rep., [D.E. 377-3](#), at 87).

PLG is conflating two separate opinions that are wholly distinct and do not contradict one another. One involved the Tarawa Terrace model and the other involved the Hadnot Point model; both critiqued ATSDR’s failure to match site-specific conditions. At deposition, Dr. Spiliopoulos stated that his report referred to the parameter ranges that ATSDR itself, not Dr. Spiliopoulos, indicated were reasonable for Tarawa Terrace. Spiliopoulos Dep. Tr., [D.E. 377-2](#), at 311:13–312:1.

For the Tarawa Terrace model, Dr. Spiliopoulos opined that ATSDR’s selection of parameter ranges for calibrated values “did not consider appropriate parameter values based on site-specific data.” Spiliopoulos Rep., [D.E. 377-3](#), at 52–53. This opinion was based on Dr. Spiliopoulos re-running the model using modified parameter values within the range of site-specific data, then comparing those results to ATSDR’s. *Id.* at 53.

For the Hadnot Point-Holcomb Boulevard sensitivity analysis, Dr. Spiliotopoulos opined that ATSDR selected extreme parameter values that are both outside the range of values used for the Tarawa Terrace analysis, and not representative of site conditions. *Id.* at 88–89. Bearing in mind that ATSDR was modeling the same aquifer at Hadnot Point and Tarawa Terrace, it is clear these opinions do not contradict one another. Dr. Spiliotopoulos’s opinions are entirely consistent and appropriate, and should not be excluded.

C. Dr. Spiliotopoulos Applied the Same Standards Used in His Non-Litigation Work to Reach His Opinions in this Case.

PLG next asserts that Dr. Spiliotopoulos has failed to apply the same standards he uses in his non-litigation work to his opinions in this case. Pls.’ Mem., [D.E. 377](#), at 5, 7–8. Despite their earlier critique of Dr. Spiliotopoulos’s qualifications, PLG acknowledges within this argument that he previously served as the “lead modeler” for a high-profile groundwater flow and contaminant transport model for a decommissioned nuclear production complex. *Id.* at 7. PLG states that Dr. Spiliotopoulos “criticized the uncertainty analysis for Hadnot Point as being limited to the effects of historical pumping variability,” and argues that the uncertainty analysis he performed for the Hanford nuclear site was “at least as limited.” *Id.* at 8. PLG also notes that “there is no indication that the parameter range used for Hanford met the not-too-narrow and not-too-wide standard applied by Dr. Spiliotopoulos here.” *Id.*

Despite their argument to the contrary, PLG demonstrated through deposition questioning that Dr. Spiliotopoulos is applying exactly the same standards to ATSDR’s work that he applied to his non-litigation work at the Hanford site. Dr. Spiliotopoulos testified that “it was impossible to do” history matching for contaminant concentrations at the Hanford site “because we had very limited data.” Spiliotopoulos Dep. Tr., [D.E. 377-2](#), at 87:3–10. At the Hanford site, Dr. Spiliotopoulos performed an uncertainty analysis on the only parameter for which they had

enough data; this was followed by a period of data collection and iterative model refinement. *See id.* at 84:11–88:10. PLG’s argument ignores the critical difference between what Dr. Spiliotopoulos was doing at Hanford, which was *forecasting future* contaminant levels based on existing and evolving data, and what ATSDR was trying to do for Camp Lejeune, which was *hindcasting historic* concentration levels with limited data. At Hanford, Dr. Spiliotopoulos necessarily did not yet have the contaminant concentrations that PLG argues that he should have used to perform an uncertainty analysis there.

PLG’s argument obfuscates the fact that, for the Hanford site, Dr. Spiliotopoulos’s limited uncertainty analysis was the first step in a decade-long, multistep process of designing a contaminant remediation scheme and continually refining the model as more data were collected. *See id.* at 95:20–96:3. Dr. Spiliotopoulos’s criticism of ATSDR’s uncertainty analysis is based on the fact that, for Hadnot Point, the uncertainty analysis on historical pumping variability was the only systematic uncertainty analysis performed. *See* Spiliotopoulos Rep., [D.E. 377-3](#), at 92. Because of the historical nature of ATSDR’s work, there was no opportunity to collect more data to refine the models. *Id.* PLG’s critique conflates these two very different processes to misrepresent Dr. Spiliotopoulos’s opinions.

Moreover, PLG’s assertion that “there is no indication that the parameter range used for Hanford met the not-too-narrow and not-too-wide standard applied by Dr. Spiliotopoulos here” is misleading. Pls.’ Mem., [D.E. 377](#), at 8. Dr. Spiliotopoulos testified at deposition that the range of hydraulic conductivity parameter values used to calibrate the Hanford model was based on the available data at the time. Spiliotopoulos Dep. Tr., [D.E. 377-2](#), at 90:3–10. Moreover, Dr. Spiliotopoulos made clear that the purpose of his modeling work at the Hanford site was to predict future characteristics of the contaminant plume in the aquifer in support of groundwater

remediation efforts. *Id.* at 78:14–17. Because of the predictive nature of this work, Dr. Spiliotopoulos did not know the potential range of hydraulic conductivities and thus could not have applied any “not too-narrow and not-too-wide” standard to evaluate them. However, as additional data became available over time, the potential range of hydraulic conductivities and other model parameters were further evaluated. This is obviously distinguishable from ATSDR’s Camp Lejeune modeling, which employed “historical reconstruction” to look back in time rather than to forecast future conditions. PLG’s Motion regarding the standards Dr. Spiliotopoulos applied should therefore be denied.

D. Dr. Spiliotopoulos’s Opinions on ATSDR’s Uncertainty and Sensitivity Analyses are Based on a Reliable Methodology.

PLG next asserts that Dr. Spiliotopoulos’s opinions on the uncertainty and sensitivity analyses conducted by PLG are unreliable because “all of the work Dr. Spiliotopoulos has done to form his opinions in this case was done for or in anticipation of litigation.” Pls.’ Mem., [D.E. 377](#), at 8 (citing *Daubert II*, 43 F.3d at 1317). PLG cites an isolated statement from the Ninth Circuit’s decision in *Daubert II*, but they fail to acknowledge the ensuing paragraphs, which make clear that “preexisting or independent research” is not the standard for admission, but only one part of determining whether any expert is employing a reliable methodology. 43 F.3d at 1317–18 (“If the proffered expert testimony is not based on independent research, the party proffering it must come forward with other objective, verifiable evidence that the testimony is based on ‘scientifically valid principles.’”).

It is true that all of the work Dr. Spiliotopoulos has done on the topic of groundwater modeling Camp Lejeune has been in the context of litigation, but it is based on methods that he has frequently used outside the context of litigation. It is not necessary that each expert have non-litigation experience on a particular site for their opinions to be admitted; otherwise most of

the expert opinions offered in this case would be excludable, including those of PLG's own Water Contamination Phase experts, Mr. Davis, Dr. Jones, and Dr. Sabatini. As shown by his prior work on the Hanford project, Dr. Spiliotopoulos is employing the same methods here that formed the basis of his past research and non-litigation experience. That Dr. Spiliotopoulos is employing standard non-litigation methodologies in his critique of ATSDR's water models is also demonstrated by the fact that his opinions are consistent with those of other reviewers of ATSDR's water models, including the Navy, the NRC, and Dr. Prabhakar Clement's published critiques in the journal *Groundwater*. See, e.g., June 19, 2008, Navy Letter to ATSDR, [D.E. 370-5](#); 2009 NRC Rep., [D.E. 372-3](#), at 50 ("Without historical geochemical data, the uncertainty associated with many of the input parameters (such as the biodegradation parameters) could be very high."); T. Prabhakar Clement, *Complexities in Hindcasting Models—When Should We Say Enough Is Enough?*, 49 Groundwater 620 (2010), [D.E. 372-4](#), at 6 ("One of the important concerns that limit the use of bioreactive transport models at chlorinated solvent sites is the lack of problem-specific information on input parameters.").

Furthermore, Dr. Spiliotopoulos's testimony in this case is based on the totality of his experience as a civil and environmental engineer and his research on groundwater modeling. See, e.g., Spiliotopoulos Rep., [D.E. 377-3](#), at 1 ("To conduct my evaluation and render my expert opinions, I relied on my education, research, and professional experience."); Spiliotopoulos Dep. Tr., [D.E. 377-2](#), at 244:10–17 (testifying that his opinion that there were insufficient data to conduct a reliable model calibration and uncertainty analysis was based on his professional judgment and experience). Dr. Spiliotopoulos employed reliable methodology in forming his opinions, and therefore, PLG's Motion should be denied.

III. Dr. Spiliotopoulos Properly Considered and Relied on Information Provided by Other Experts in Informing His Own Opinions.

PLG next argues that Dr. Spiliotopoulos's opinions on two subjects are "neither helpful nor admissible" because they are "parroted opinions of other experts." Pls.' Mem., [D.E. 377](#), at 13. PLG seeks to prevent Dr. Spiliotopoulos from testifying as to losses of volatile organic compounds in water during the water treatment process, and the earliest time at which PCE began entering the environment. *Id.* at 13–14. PLG alleges that Dr. Spiliotopoulos simply relied on the opinions of other experts in this litigation, without offering "additional findings." *Id.* However, Dr. Spiliotopoulos does not parrot the opinions of other experts as his own; rather, he relies on facts or data supplied by other experts. Given that an expert in Dr. Spiliotopoulos's field would reasonably rely on these types of facts and data in forming his opinions, this is permitted under Fed. R. Evid. 703.

A. Dr. Spiliotopoulos Relied on the Fact that Contaminant Losses Would Occur During Water Treatment, and Incorporated that Fact into His Own Opinions.

Contrary to PLG's assertion, Dr. Spiliotopoulos has not offered an opinion quantifying the losses of volatile organic compounds during the water treatment process. *See generally* Spiliotopoulos Rep., [D.E. 377-3](#). Dr. Spiliotopoulos testified:

Q: . . . Have you, yourself, performed any calculations regarding alleged volatilization losses at the water treatment plant?

A: No, I have not, my calculations [e]nd at the treatment plant.

Q: So are you relying on the calculations and the opinions of Dr. Hennet regarding the quantification of any alleged VOC losses at the water treatment plants?

A: Yes, I do.

Spiliotopoulos Dep. Tr., [D.E. 377-2](#), at 192:23–193:10. As his deposition testimony and report make clear, Dr. Spiliotopoulos is relying on Dr. Hennet's calculations for the general proposition

that VOC losses occurred during treatment and incorporating that proposition into his own opinions.³

For example, Dr. Spiliopoulos opines that ATSDR’s reference to “finished water” or “groundwater that has undergone treatment” in its studies is more appropriately described as “concentrations in the influent to the treatment plant.” Spiliopoulos Rep., [D.E. 377-3](#), at 30–31. That is because ATSDR “ignored contaminant losses that would occur during treatment.” *Id.* at 30. Based on this understanding, Dr. Spiliopoulos opined that “treatment of the influent to the treatment plant resulted in evaporative and other losses, reducing contaminant concentrations in the ‘finished’ water.” *Id.* at 68–69. In support of this opinion, Dr. Spiliopoulos relied both on Dr. Hennet’s calculations, as he testified at deposition, and on his reading of ATSDR’s report, as evidenced by the citation which follows this proposition. *See id.* at 30. For this reason, PLG’s Motion should be denied.

B. Dr. Spiliopoulos Relyed on a Historian to Determine a Historical Fact, then Incorporated that into His Own Opinions.

Also contrary to PLG’s assertion, Dr. Spiliopoulos did not offer the opinion that the PCE source release date at ABC One-Hour Cleaners was incorrect without “additional corroboration, validation, or explanation.” Pls.’ Mem., [D.E. 377](#), at 13 n.3. As Dr. Spiliopoulos testified at deposition, he relied on the report of the United States’ expert historian, Dr. Brigham, to support the proposition that the off-base dry cleaner began operating in June of 1954. Spiliopoulos Dep. Tr., [D.E. 377-2](#), at 223:2–18. Dr. Spiliopoulos also testified that he reviewed for himself the documents Dr. Brigham cited. *Id.* Dr. Spiliopoulos properly relied on a historian to search and interpret the historical record. *See von Rosenberg v. Lawrence*, 413 F.

³ Despite PLG’s challenge to this opinion, PLG’s expert, Dr. Sabatini, also opines that contaminant losses would occur during water treatment. *See* Sabatini Rebuttal Rep., [D.E. 374-5](#), at 13–14 (opining that the percentage loss of VOCs of interest during water treatment was “less than 6 to 12%”).

Supp. 3d 437, 450 (D.S.C. 2019) (collecting cases) (finding that historians generally possess the specialized knowledge to identify, review, and synthesize voluminous historical texts).

Dr. Spiliopoulos then incorporated this expert's information into his own opinions by explaining how the earlier contamination start date impacted ATSDR's water models. For example, Dr. Spiliopoulos wrote that "the impact of this discrepancy in release start dates is that the PCE plume reached the water supply wells sooner in ATSDR's model." Spiliopoulos Rep., [D.E. 377-3](#), at 36. Moreover, to demonstrate the impact on model outputs of changing the PCE release start date and other suggested corrections, Dr. Spiliopoulos ran a modified version of ATSDR's simulation. *Id.* at 39–41. This analysis compared the results of ATSDR's original model with Dr. Spiliopoulos's corrections, based, in part, on a later contamination start date. *Id.* This is clearly the type of information that an expert like Dr. Spiliopoulos reasonably relies upon. Fed. R. Evid. 703.

In support of the proposition that Dr. Spiliopoulos's opinions on contaminant losses during water treatment and the contamination start date should be excluded, PLG cites to *In re Davol*, 546 F.Supp.3d at 676, and *Funderburk v. S.C. Elec. & Gas Co.*, 395 F. Supp. 3d 695, 721–22 (D.S.C. 2019). Pls.' Mem., [D.E. 377](#), at 13-14. In *In re Davol*, the Southern District of Ohio acknowledged that experts may "base an opinion on another expert witness for a point of expert knowledge not personally possessed," but may not "simply parrot another expert's opinion." 546 F.Supp.3d at 676 (internal quotations omitted). The court, in fact, declined to exclude the opinions of an expert, even though the expert did not independently validate the findings of another expert before relying on them. *Id.* at 675–76. This is because the expert in *In re Davol* also made "many of his own findings, which [were] well-supported by scientific literature and his own testing and experience." *Id.* at 676.

As with the expert in *In re Davol*, Dr. Spiliotopoulos is taking data points supplied by experts in different fields into consideration in forming his ultimate opinions. *Id.* at 675–76. Dr. Spiliotopoulos is then incorporating that data into his own opinions, offering context or performing new analysis using that information.

In *Funderbunk*, the District of South Carolina excluded as unreliable the opinion of an expert based only on his review of another expert's report. 395 F. Supp. 3d at 721–22. Unlike the expert in *Funderbunk*, Dr. Spiliotopoulos has not simply repeated opinions that another expert is prepared to provide. *Id.* Rather, Dr. Spiliotopoulos reviewed the documents that support the information provided by other experts in addition to their reports. He then utilized that data to inform his own opinions. Accordingly, Dr. Spiliotopoulos's opinions related to contaminant losses during treatment and the PCE release start date should not be excluded.

IV. Dr. Spiliotopoulos's Opinion on Well HP-634 is Reliable, and PLG's Attack on This Opinion is Based on their Disagreement with His Ultimate Conclusion, Not His Methodology.

Finally, PLG seeks to exclude Dr. Spiliotopoulos's opinion that ATSDR misinterpreted a water quality sample taken from well HP-634 on January 16, 1984. Pls.' Mem., [D.E. 377](#), at 14. PLG argues that Dr. Spiliotopoulos's analysis of this issue is “not based on sufficient facts or data, nor is it the product of reliable principles and methods” because Dr. Spiliotopoulos relied on: (1) Dr. Hennet's analysis of the issue, (2) the fact that HP-634 is upgradient from contamination sources, and (3) other samples taken at that well around the same time. *Id.*

PLG does not explain how or why Dr. Spiliotopoulos's reliance on these three sources is insufficient or unreliable. Rather, they argue that Dr. Spiliotopoulos ultimately reached the wrong conclusion from those sources. *See generally id.* at 14–16. In support of this, PLG cites their own expert rebuttal report five times. *Id.*

For example, PLG asserts that Dr. Spiliotopoulos offered an opinion on the water quality sample “without the identification of a reliable methodology, performance of any calculations or measurements, or citation to authority” *Id.* at 15. In support of this argument, PLG cites the rebuttal report of their own expert, Dr. Konikow, who does not identify any employed methodology, perform any calculations or measurements, or cite to any authority in reaching the opposite conclusion. *See* Konikow Rep., [D.E. 377-6](#), at 21–23. Rather, both experts rely on general principles of hydrogeology to reach differing conclusions from the same data. *See id.*

This is plainly a dispute between the Parties’ experts on the interpretation of the same sampling data, not a dispute over the reliability of Dr. Spiliotopoulos’s testimony. PLG asks this Court to exclude Dr. Spiliotopoulos’s testimony not because it is irrelevant or unreliable, but because PLG’s experts disagree with it. This is not a proper basis for the exclusion of testimony under Fed. R. Evid. 702. *Bresler v. Wilmington Tr. Co.*, 855 F.3d 178, 195 (4th Cir. 2017); *see also Funderburk*, 395 F. Supp. 3d at 721 (finding that a party’s *Daubert* challenge improperly focused on the way in which an expert interpreted data, not the methodology underlying the opinion).

In *Bresler*, the defendant challenged the plaintiffs’ expert accountant on the basis that his calculations were erroneous and used an improper discount rate. 855 F.3d at 195–96. The Fourth Circuit affirmed the trial court’s refusal to exclude the testimony, holding that, “[t]o determine whether an opinion of an expert witness satisfies *Daubert* scrutiny, courts may not evaluate the expert witness’ conclusion itself, but only the opinion’s underlying methodology.” *Id.* at 195. The Fourth Circuit further stated that “questions regarding the factual underpinnings of the expert witness’ opinion affect the weight and credibility of the witness’ assessment, not its admissibility.” *Id.* (cleaned up). As in *Bresler*, PLG is challenging Dr. Spiliotopoulos’s

interpretation of the sampling data because the result is unfavorable to them. This argument is inapposite under the Fed. R. Evid. 702 analysis, and PLG's Motion should therefore be denied.

CONCLUSION

For the foregoing reasons, the United States requests that the Court deny PLG's Motion for an Order Excluding Certain Opinions of Alexandros Spiliopoulos, Ph.D.

[Signature page to follow.]

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CERTIFICATE OF SERVICE

I hereby certify that on June 4, 2025 I electronically filed the foregoing using the Court's Case Management/Electronic Case Files system, which will send notice to all counsel of record.

/s/ Giovanni Antonucci
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